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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,930	02/06/2004	Wenjie Li	FIS920030408US1	7400

30449 7590 04/18/2005
SCHMEISER, OLSEN + WATTS
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SUITE 201
LATHAM, NY 12110

EXAMINER

LEE, SIN J

ART UNIT PAPER NUMBER

1752

DATE MAILED: 04/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/773,930

Applicant(s)

LI ET AL.

Examiner

Sin J. Lee

Art Unit

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-20 and 23-34 is/are rejected.
- 7) ☒ Claim(s) 2,3,21 and 22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

1. In view of the amendment of January 10, 2005, previous 102(b) rejection on claims 1 and 16 and previous 103(a) rejection on claims 9-12, 27, and 28 over Nakamura (JP'393) are hereby withdrawn.
2. Due to newly cited prior art, the following rejection is made non-final.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

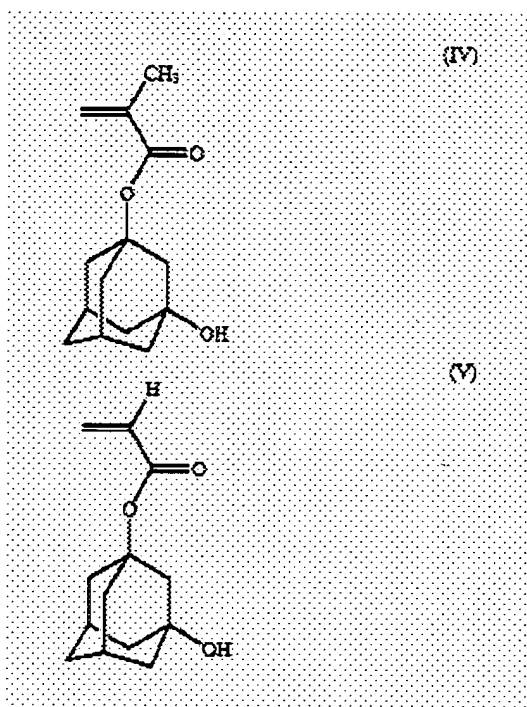
A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

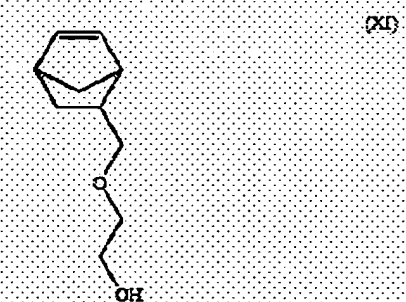
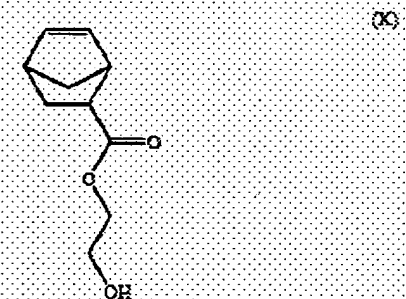
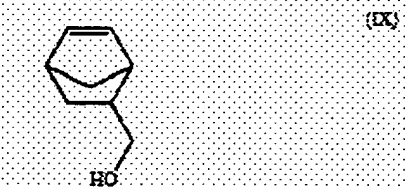
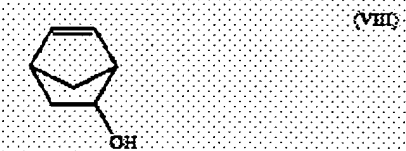
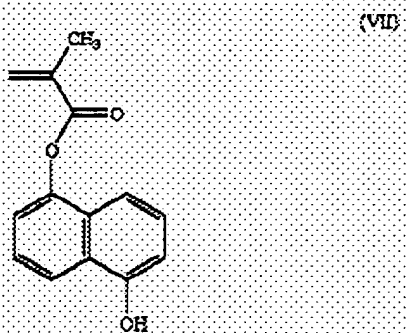
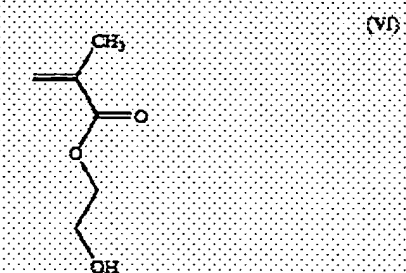
4. Claims 1, 4-20, and 23-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Li et al (US 2005/0058930 A1).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

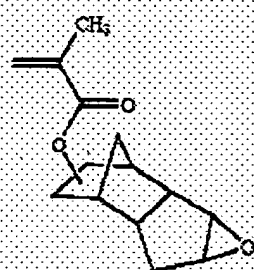
In claims 1 and 3, Li teaches a negative resist composition comprising a polymer which include at least one *fluorosulfonamide monomer unit* and a co-monomer unit selected from the group consisting of:



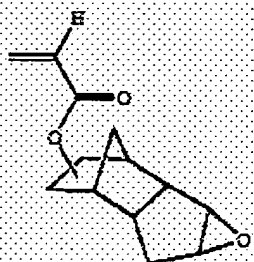
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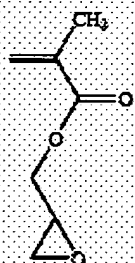
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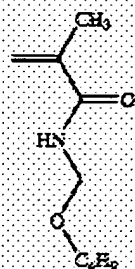
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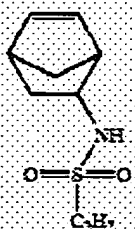
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(XIV)

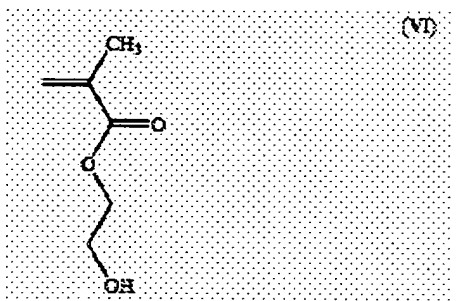


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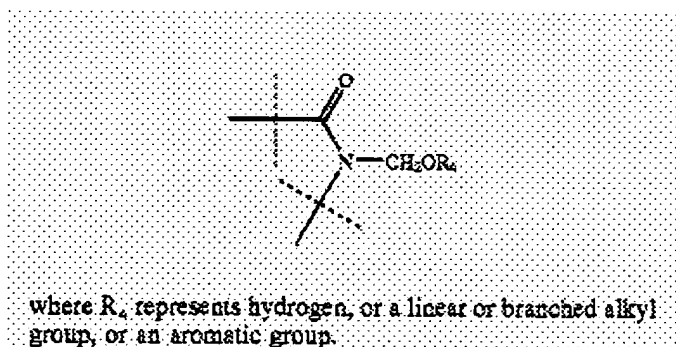


(XVI)

Since there are only thirteen compounds shown above, one of ordinary skill in the art would immediately envisage Li's polymer to have a fluorosulfonamide monomer unit and a co-monomer unit of the following structure



The co-monomer unit (VI) teaches present first monomer of claim 1. Li's claims 4-6 teaches present radiation sensitive acid generator of claims 1, 7, and 8. Li's claim 8 teaches that his negative resist composition comprises a crosslinking agent of the following structure:



Based on this teaching, one of ordinary skill in the art would immediately envisage R_4 of the above structure to be H or a linear or branched alkyl group. Thus, Li's crosslinking agent shown above teaches present structure for the additive of claim 1. Therefore, Li teaches present inventions of claims 1 and 4-8.

Li's claim 7 states that his negative resist composition further comprises a solvent and a quencher. In [0019], Li teaches that preferred solvents include propylene

glycol monomethyl ether acetate, ethyl lactate, γ -butyrolactone, and cyclohexanone. In [0026], Li teaches that examples of quenchers include aromatic or aliphatic amines.

Therefore, Li teaches present inventions of claims 9-12.

Li's claim 11 states the following:

11. The resist composition of claim 7, wherein the resist composition comprises (i) about 1 to about 30 wt. % of the polymer, (ii) about 1 to about 30 wt. % of crosslinking agent, based on the total weight of the polymer, (iii) about 0.5 to about 20 wt. % of photoacid generator, based on the total weight of the polymer, and (IV) a solvent which is present in an amount of about 70 to about 99 wt. % of the composition.

Based on this teaching, one of ordinary skill in the art would immediately envisage using 30 wt.% of the crosslinking agent because "30wt.%" is clearly included as the higher end of the taught range. Therefore, Li teaches present invention of claim 13. Li also teaches in [0028] that the quencher is present in the amount of 0.1-1.0 wt.% based on the total weight of the polymer. Thus, Li teaches present invention of claim 14. Also, Li's teaching in claim 12 teaches present invention of claim 15.

In his claims 13, 14, and 17-19, Li teaches a method of forming a patterned material layer on a substrate, the method comprising the steps of (a) providing a substrate having a material layer on a surface; (b) applying a resist composition to the substrate to form a resist layer on the material layer; (c) patternwise exposing the resist layer to imaging radiation (of 193 nm or 157 nm); (d) removing portions of the resist layer not exposed to the imaging radiation in step (c) to create spaces in the resist layer corresponding to the pattern by contacting the resist layer with a developer; and (e) removing portions of the material layer at the spaces formed in step (d) by etching into the material layer through spaces formed in the resist layer, thereby forming the

patterned material layer. Also, in [0032], Li teaches that after the etching step, any remaining resist from the substrate is removed. Therefore, the prior art teaches present inventions of claims 16-20 and 23-30.

With respect to present claims 31-34, the present claim language does not require that present R1 of claim 1 or claim 16 to be an aryl group or an aralkyl group. Therefore, Li still teaches present invention of claims 31-34.

Double Patenting

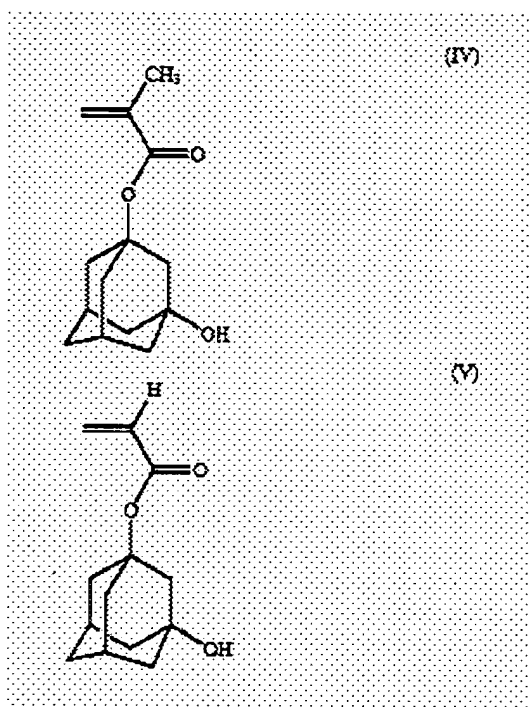
5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

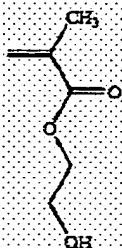
6. Claims 1, 4-9, 13, 15, 16, 18-20, 23-27, and 29-34 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3-8, 11-14, and 17-19 of copending Application No. 10/663,553. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons.

Claims 1 and 3 of App.'553 teaches a negative resist composition comprising a polymer which include at least one *fluorosulfonamide monomer unit* and a co-monomer unit selected from the group consisting of:

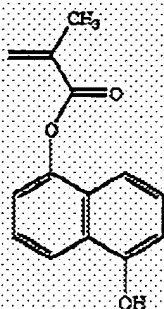


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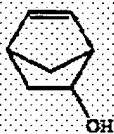
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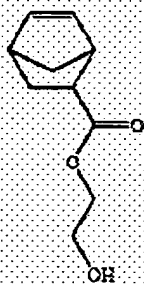
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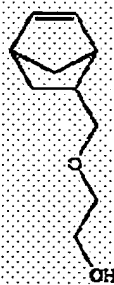
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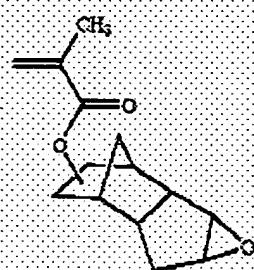
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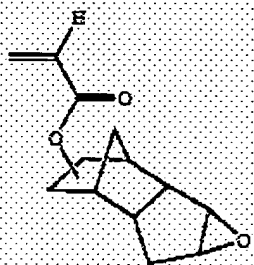
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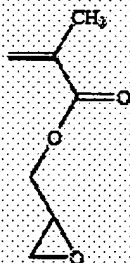
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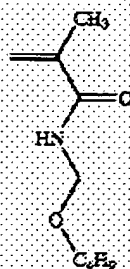
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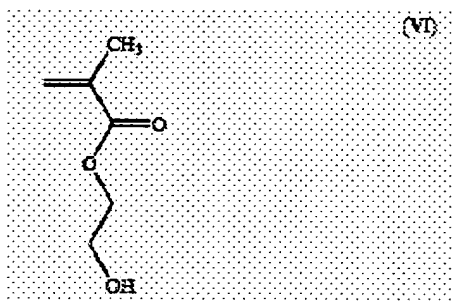


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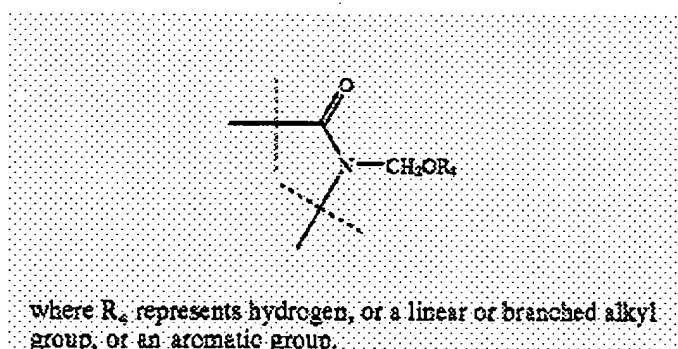


(XVI)

Since there are only thirteen compounds shown above, it would have been obvious to one of ordinary skill in the art to make the polymer of App.'553 to have a fluorosulfonamide monomer unit and a co-monomer unit of the following structure



with a reasonable expectation of obtaining a negative resist composition. The co-monomer unit (VI) teaches present first monomer of claim 1. Claims 4-6 of App.'553 teaches present radiation sensitive acid generator of claims 1, 7, and 8. Claim 8 of App.'553 teaches that the negative resist composition comprises a crosslinking agent of the following structure:



Based on this teaching, it would have been obvious to one of ordinary skill in the art to have R_4 of the above structure to be H or a linear or branched alkyl group. Thus, the teaching of App.'553 renders obvious present structure for the additive of claim 1. Therefore, App.'553 renders obvious present inventions of claims 1 and 4-8.

Claim 7 of App.'553 states that the negative resist composition further comprises a solvent and a quencher. Therefore, App.'553 renders obvious present invention of claim 9.

Claim 11 of App.'553 states the following:

11. The resist composition of claim 7, wherein the resist composition comprises (i) about 1 to about 30 wt. % of the polymer, (ii) about 1 to about 30 wt. % of crosslinking agent, based on the total weight of the polymer, (iii) about 0.5 to about 20 wt. % of photoacid generator, based on the total weight of the polymer, and (IV) a solvent which is present in an amount of about 70 to about 99 wt. % of the composition.

Since those ranges overlap with present ranges of claim 13, the prior art's ranges would render present ranges *prima facie* obvious. In the case "where the [claimed] ranges overlap or lie inside ranges disclosed by the prior art," a *prima facie* case of obviousness would exist which may be overcome by a showing of unexpected results, In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). Thus, App.'553 would render obvious present invention of claim 13. Also, claim 12 of App.'553 renders obvious present invention of claim 15.

Claims 13, 14, and 17-19 of App.'553 teach a method of forming a patterned material layer on a substrate, the method comprising the steps of (a) providing a substrate having a material layer on a surface; (b) applying a resist composition to the substrate to form a resist layer on the material layer; (c) patternwise exposing the resist layer to imaging radiation (of 193 nm or 157 nm); (d) removing portions of the resist layer not exposed to the imaging radiation in step (c) to create spaces in the resist layer corresponding to the pattern by contacting the resist layer with a developer; and (e) removing portions of the material layer at the spaces formed in step (d) by etching into

the material layer through spaces formed in the resist layer, thereby forming the patterned material layer. Therefore, App.'553 would render obvious present inventions of claims 16, 18-20, 23-27, 29, and 30.

With respect to present claims 31-34, the present claim language does not require that present R1 of claim 1 or claim 16 to be an aryl group or an aralkyl group. Therefore, App.'553 still renders obvious present invention of claims 31-34.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Allowable Subject Matter

7. Claims 2, 3, 21, and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Li et al does not teach or suggest present additives of claims 2, 3, 21, and 22.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

Art Unit: 1752

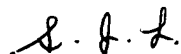
published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

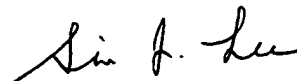
For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).



S. Lee
April 14, 2005



Sin J. Lee
Patent Examiner
Technology Center 1700